Innovative Applications for Demand Management

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Why Cut Demand?

1. Saves scarce funding
2. Legislative/Executive Directives
   - *10 USC § 2865* Energy Savings at Military Installations
   - 42 U.S.C. 8252 NECPA and as modified by EPACT
   - Executive Order 13123

Ideas for Cutting Demand

1. Cut consumption
2. Generate power

Cut Consumption

1. Cut overall consumption
    1. Improved O&M
        - Periodic recommissioning of HVAC
        - Computer aided maintenance management
    2. New energy efficient equipment
        - Appropriations
        - Alternative financing
        - Several states and utilities have rebates to help offset upfront costs

Cut Consumption

New equipment examples

- Lighting
- Variable speed drives
- Energy efficient boilers
- Energy efficient chillers
- Variable air volume systems
- High efficiency motors
- Controls

Cut Consumption

2. Cutting consumption during peak period
   - Requires ability to monitor use
   - Can be manual or automated
     - Requires a plan of action
     - State of the art control system very useful
       - MUST be accompanied with trained personnel
       - Motivated to use the data
   - Many utilities have programs to reward customers who reduce demand during peak use periods.
   - Cut need to use of utilities a peak times by

Generate Power

1. Generate power full time
   - Supply 100% of the facility's power
     - CHP/cogeneration should be considered
     - Boilers
     - Industrial turbines
     - Microturbines
     - Fuel cells
     - Geothermal
     - Reciprocating engines
     - Renewables
       - Bio or Coal Gas
       - PV
       - Wind
       - Hybrid

Generate Power

1. Generate power full time
   - Supply a part of the facility's power
     - Consider use of emergency generators
     - Same generation options as full power, only size for part load
     - Consider use of renewables
       - Rebates may offset initial costs
       - Likely to need some type of storage

Generate Power

2. Generate power during peak hours
   - Use emergency generators
     - Good for O&M on generators
     - May have emissions limits
   - Use PV/other renewables
     - PV good match since max output coincides with cooling peak

Conclusion

- There are a lot of good technologies to help.
  - Energy efficient equipment
  - Controls
  - Computer programs
  - Alternative financing
- Single biggest factor is O&M